

EXHIBIT “F”

Sound Testimony®

June 23, 2008

Final Report including listening analysis of DVD-ROM WAV data files and Audio Enhancement Methodology Summary

Assignment:

Sound Testimony® was originally contacted by Richard Minatoya, Esq., Deputy Prosecuting Attorney, Department of the Prosecuting Attorney, County of Maui, to examine the recorded material on two standard audio cassettes. The task was to verify and confirm what John J. Mitchell, of Computer Audio Engineering (CAE) of Albuquerque, NM, found to be on the tapes.

Please see the previously submitted Q1 revised transcript, Q2 revised transcript, and the Q1 and Q2 Report for the results of the requested analysis.

On April 21, 2008, I received, via FedEx, a sealed, padded manila envelope from investigator Margo Evans that contained the following:

1. A DVD-ROM containing WAV data files
2. A cover letter dated February 29, 2008 from Mark Barrett, Esq. Of Norman, OK to Peter Hanano, First Deputy Prosecuting Attorney, 150 S. High Street, Wailuku, Maui, Hawaii 96793 stating "Dear Mr. Hanano: Enclosed is an audio disc corresponding with the previously sent report of Jack Mitchell. Sincerely, Mark Barrett"
3. An additional packet of material with a yellow colored post-it note on which "Previously Sent Reports" was written. The packet's first page is another cover letter from Mark Barrett, Esq. to Peter Hanano, Esq. describing the accompanying reports as copies of John J. Mitchell's December 2007 report and (2) transcripts of the 911 tape.
4. Although the (2) transcripts were not in the packet of material, Mr. Mitchell's December 2007 report was found. The report contained highlights of the Q2 transcript and a written overview contained in three tables of what Mr. Mitchell described as "Significant Audio Information, in Sequence:"

Audio to be examined:

1. One DVD-ROM was provided.
 - a. It will be referred to as Q3.
 - b. Margo Evans informed me via telephone that the disc's WAV data files included more recent files from CAE than those to which I previously had access.

814.410.4787
david@soundtestimony.com

www.soundtestimony.com

1185 Agnes Avenue
Johnstown, PA 15905

EXHIBIT " F "

Visual Description of Q3 DVD-ROM

1. Memorex DVD+R DVD-ROM – the number 4355F1416+01472E08 is stamped on the bottom of the DVD hub ring.
 - a. I initialed the DVD-ROM for identification purposes.
 - b. The DVD-ROM has “Christian 2007” written across the top half of the disc and “Wav Data Files” written across the bottom half of the disc. A broad felt-tipped pen may have been used for all of the writing.
 - c. The DVD-ROM is housed in a clear slim-line DVD case with a black plastic tray and a clear plastic top swivel top.
2. The electronic title burned on the DVD-ROM is “Christian Wav Data Files”
3. The DVD-ROM contained the following folders:
 - a. “Alarm”
 - b. “Alarm_new_proc”
 - c. “Burkhardt”
 - d. “Burkhardt_Isolation”
 - e. “Burkhardt_new_proc”
 - f. “Chris”
 - g. “Chris_Diaz”
 - h. “Christian_orig_16_44”
 - i. “Christian_orig_24_48”
 - j. “Drop_Him”
 - k. “Get_help”
 - l. “Get_him”
 - m. “Kimmey Segments”
 - n. “The_Fight”
 - o. “You_Lose_Today”
4. Two Macintosh Operating System (OS) files, “Desktop DB” and “Desktop DF” share the root directory with the folders.

Q3 Folder by Folder Analysis (time code references are to Sound Testimony’s® previously submitted Q1 and Q2 transcripts and are hereafter referred to as Q1-transcript and/or Q2 transcript.)

1. The “Alarm” folder contains four wav files corresponding approximately to 5:33.1 on the revised Q1 transcript.
 - a. **Following repeated critical listening sessions after advanced enhancement techniques were applied; it is possible that two different people may have spoken the words attributed to the victim, as the rhythm and timbre of the voices seem to be different.**
 - b. **FIRST UNIDENTIFIED MALE: “I was just killing time, you know. I got pushed around... (Unintelligible) ...long time ago.”**
SECOND UNIDENTIFIED MALE: “Cannot breathe.”
 - c. **Nothing in the “Alarm” folder necessitates any change to the earlier findings.**

2. The "Alarm_new_proc" folder contains seven wav files corresponding approximately to 5:33.1 in the Q1 transcript.
 - a. Please see results of the analysis of the "Alarm" folder (Number 1)
 - b. Nothing in the "Alarm_new_proc" folder necessitates any change to the earlier findings.
3. The "Burkhardt" folder contains eight wav files corresponding approximately to 5:07.3 in the Q1 transcript.
 - a. This was initially not verified during repeated critical listening sessions after advanced enhancement* techniques were applied.
 - b. Nothing in the "Burkhardt" folder necessitates any change to the earlier findings.
4. The "Burkhardt_Isolation" folder contains five wav files corresponding approximately to 05:07.3 in the Q1 transcript.
 - a. This was initially not verified during repeated critical listening sessions after advanced enhancement* techniques were applied.
 - b. Nothing in the "Burkhardt_Isolation" folder necessitates any change to the earlier findings.
5. The "Burkhardt_new_proc" folder contains eight wav files corresponding approximately to 05:07.3 in the Q1 transcript.
 - a. This was initially not verified during repeated critical listening sessions after advanced enhancement* techniques were applied.
 - b. Nothing in "Burkhardt_new_proc" folder necessitates any change to the earlier findings.
6. The "Chris" folder contains four wav files corresponding approximately to 1:37.2 in the Q1 transcript.
 - a. This was initially not verified during repeated critical listening sessions after advanced enhancement* techniques were applied.
 - b. The conclusion reached was that the 'Phased' telephone sound of the voice indicates possible telephone interference as the voice source.
 - c. Since an additional syllable was heard, the corrected transcript reads, "Christa".
 - d. Nothing in the "Chris" folder necessitates any change to the earlier findings.
7. The "Chris_Diaz" folder contains nine wav files corresponding approximately to 5:20.1 in the Q1 transcript.
 - a. This was initially not verified during repeated critical listening sessions after advanced enhancement* techniques were applied.
 - b. Nothing in the "Chris_Diaz" folder necessitates any change to the earlier findings.

8. The "Christian_orig_16_44" folder contains two wav files, one from Q1 and the other from Q2.
 - a. **Nothing in the "Christian_orig_16_44" folder necessitates any change to the earlier findings.**
9. The "Christian_orig_24_48" folder contains two wav files, one from Q1 and the other from Q2.
 - a. **Nothing in the "Christian_orig_24_48" folder necessitates any change to the earlier findings.**
10. The "Drop_Him" folder contains five wav files corresponding approximately to 1:47.4 in the Q1 transcript.
 - a. **This was initially not verified during repeated critical listening sessions after advanced enhancement techniques were applied.**
 - b. **The corrected transcript reads, "Drop it." rather than "Drop Him."**
 - c. **Nothing in the "Drop_Him" folder necessitates any change to the earlier findings.**
11. The "Get_help" folder contains four wav files.
 - a. **This was initially not found during repeated critical listening sessions after advanced enhancement techniques were applied.**
 - b. **Nothing in the "Get_help" folder necessitates any change to the earlier findings.**
12. The "Get_him" folder contains four wav files corresponding approximately to 5:07.3 in the Q1 transcript.
 - a. **This was initially not verified during repeated critical listening sessions after advanced enhancement techniques were applied.**
 - b. **Nothing in the "Get_him" folder necessitates any change to the earlier findings.**
13. The "Kimmey Segments" folder contains seven wav files corresponding approximately to 11:44.3 in the Q2 transcript.
 - a. **This was initially verified during repeated critical listening sessions after advanced enhancement techniques were applied.**
 - b. **Nothing in the "Kimmey Segments" folder necessitates any change to the earlier findings.**
14. The "The_Fight" folder contains six wav files corresponding approximately to 1:55.3 in the Q1 transcript.
 - a. **This segment matches the Sound Testimony[®]-enhanced Q1 and associated transcript findings.**

15. The "You_Lose_Today" folder contains five wav files corresponding approximately to 1:27.1 in the Q1 transcript.
 - a. **This was initially not verified during repeated critical listening sessions after advanced enhancement* techniques were applied.**
 - b. **Nothing in the "You_Lose_Today" folder necessitates any change to the earlier findings.**

*Advanced Enhancement Techniques were a part of the examination and analysis process of Q1 and Q2.

The procedure was conducted in the following manner.

1. The tapes were marked for later identification.
2. They were inspected for damage that could affect their ability to accurately reproduce audio for digitization.
3. Digital data files were created for each tape. As explained in the earlier reports, both tapes were digitally transferred to Sound Testimony's® digital system at unity gain, with no direct signal amplification or attenuation. The audio was recorded at a bit depth of 32 (floating point) and a sampling rate of 48,000 Hertz. 32-bit (floating point) was chosen due to its lower error build-up, compared to 16-bit and 24-bit integer systems, during the extensive processing that is required during a typical audio forensics examination.

Both Q1 and Q2 had their tapes rewound and a second transfer was performed at the same volume level.

Both of Q1's (and subsequently Q2's files) were loaded into a multitrack audio editor where they were aligned with one another to a single sample level of accuracy. The polarity (phase) of one of the two tracks was then inverted and I observed that the signal was nulled out (0dB/silent) throughout the entire recording. This effectively demonstrated that the tape(s) had been accurately transferred to the digital system.

4. Periods of critical listening sessions on high-quality headphones were performed to determine the type and magnitude of factors contributing to any lack of intelligibility. While not limited to the following, a few of the initial issues that were identified as having to be overcome on these particular tapes were:
 - a. Both Q1 and Q2 exhibited excessive ambient/environmental noise to the extent that it interfered with speech clarity.

- b. Q1 had interference and, at times, signal loss from the telephone used by Mr. Perry, the man who telephoned 911. As Mr. Perry was describing how he was moving closer to the scene, it sounded as if he was using a cordless telephone as the signal quality to and from what may have been his telephone's base station varied, resulting in the subsequent 911 recording's quality to be inconsistent.
 - c. Q1 required increasing clarity of other individuals who were also speaking near Mr. Perry's telephone.
 - d. Q2 had a large amount of gain/amplitude difference between Lisa Kimmey, who was near the telephone recording device and cassette recorder resulting in her voice being recorded at a high level, and Taryn Christian who was off site being recorded at a lower level that, at times, resulted in Mr. Christian's voice being masked by noise.
 - e. Q2 had a large amount of system noise from the cassette tape media itself as well as the noise generated by the telephone and the cassette recorder's internal electronics.
5. High-Resolution Spectroscopic Analysis of both Q1 and Q2's digitized waveforms was performed to look at the waveforms in the frequency domain:
- a. to determine the speech target range of each recording.
 - b. to identify any consistent noise bands or tones that could be filtered.
 - c. to visually see the level and frequency of speech compared to the noise levels through the use of time, frequency, and amplitude displays.
6. Advanced Enhancement included, but was not limited to, the following steps:
- a. Setting brickwall filters to limit the bandwidth to the range of the speech on each tape.
 - b. 'Auditioning' a number of "Continuous Noise Filters" (CNF) from different software publishers to determine which tool would restore the highest level of voice clarity without removing any of the desired speech.
 - c. A 'noiseprint' of the remaining broadband noise was captured (after the brickwall filtering) and used in the 'training' of all candidate Continuous Noise Filters. This procedure was followed for each tape.
 - d. Critical listening to the entire tape in "preview" mode was necessary before applying the chosen CNF to determine that no dialogue was included in the noise that was going to be reduced. While listening, careful adjustments of the settings, unique to each software tool, were made to ensure the reduction of only noise and not speech material.
 - e. After the CNF exhibiting the highest quality audio results was selected, the CNF process was applied and steps "c" and "d" were repeated, capturing a new, lower volume 'noiseprint' while applying the same safeguards to protect the speech material.
 - f. After careful monitoring in "Preview" mode to ensure that no speech elements would be removed, an Adaptive Noise Filter's parameters were carefully set and the filter was then applied to reduce as much of the remaining noise as possible without removing any of the dialogue.

- g. In the case of Q2, a Dynamics Processor was applied to even out the amplitude differences of the Near/Distant recording levels of Lisa Kimmey and Taryn Christian.
7. While listening to the new enhanced recordings, two new transcripts that became the Q1 Transcript and the Q2 Transcript were created.
8. The sealed envelope from CAE was then opened and the Sound Testimony®-enhanced 911 audio file was aligned to match as closely as possible the starting time of the CAE-prepared 911 transcript for reference purposes.
9. Working from Q1 and Q2 enhanced recordings and the new transcripts, I determined which of the statements selected for verification by the Maui County Prosecutor's office could be verified.
10. I completed the verification process and wrote a report regarding my findings.
11. I created a Q1 enhanced audio CD and a Q2 enhanced audio CD.
12. I sent, via FedEx, signed copies of the Q1 transcript, the Q2 transcript, the Verification Report, the Q1 CD, and the Q2 CD to Margo Evans, Investigator on this case.
13. A second submission was made concerning statements in Q2 by Taryn Christian to Lisa Kimmey regarding the case. After isolating the statements, I created an audio CD containing the statements, a time code track sheet was created from which one could find the statements on the CD as well as look up the statements on the Sound Testimony®-created Q2 transcript. The CD and the track sheet were shipped, via FedEx, to Margo Evans.

This report is being sent, via FedEx, to Margo Evans along with the return of the DVD-ROM containing audio data files and the accompanying cover letters and report.

For the Maui Prosecutor's office's files, the package will also include the Sound Testimony®-enhanced Q1, Q2, and the Q2 Segment CDs as WAV data CDs rather than the Audio CD format discs that were previously sent. They are distinguishable from the original audio CDs by the addition of RED lettering on their labels indicating that they are data CDs. These CDs will not play in a standard audio CD player.

I, David A. Smith, am a resident of Johnstown, County of Cambria, State of Pennsylvania, and do hereby certify, swear or affirm, and declare that I am competent to give the following declaration: I have prepared the preceding report and that the contents are true and correct to the best of my knowledge.

WITNESS my signature this 23 day of June (~~March~~, 2008).

David A. Smith
Signature of Declarant

State of Pennsylvania)
County of Cambria)

On June 23rd, 2008, David Smith
personally came before me and, being duly sworn, signed the above document in my presence.

Jeanne M. Mack
Signature of Notary Public

Notary Public, In and for the County of Cambria
State of Pennsylvania

My commission expires: March 23, 2011

Notary Seal

